WHAT IS CLAIMED IS:

1. An automotive lane deviation prevention apparatus comprising:

a processor programmed to perform the following,

executing vehicle yawing motion control by which a host vehicle returns to a central position of a driving lane, when the host vehicle is traveling on predetermined irregularities formed on or close to either one of a left-hand side lane marking line and a right-hand side lane marking line of the driving lane.

2. An automotive lane deviation prevention apparatus comprising:

a processor programmed to perform the following,

(a) determining whether a host vehicle is traveling on predetermined irregularities formed on or close to either one of a left-hand side lane marking line and a right-hand side lane marking line of a driving lane; and

(b) executing vehicle yawing motion control by which the host vehicle returns to a central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities.

3. The automotive lane deviation prevention apparatus as claimed in claim 2, further comprising:

wheel speed sensors that detect respective wheel speeds of road wheels of the host vehicle,

wherein the processor is further programmed for:

(a) determining, based on signals from the wheel speed sensors, whether the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane.

4. The automotive lane deviation prevention apparatus as claimed in claim 3, wherein the processor is further programmed for:

(a) determining that the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane, when at least one of the wheel speeds detected by the wheel speed sensors is fluctuating at a substantially constant time period determined based on a host vehicle speed.

5. The automotive lane deviation prevention apparatus as claimed in claim 3, wherein the processor is further programmed for:

(a) determining that the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane, only when either one of the left and right wheel speeds is fluctuating.

6. The automotive lane deviation prevention apparatus as claimed in claim 2, further comprising:

a vehicle-suspension up-and-down motion sensor that detects an up-and-down motion of a suspension of the host vehicle,

wherein the processor is further programmed for:

(a) determining, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane.

7. The automotive lane deviation prevention apparatus as claimed in claim 2, wherein the processor is further programmed for:

(c) determining whether the host vehicle is traveling within an area except road-ways; and

(d) inhibiting a check for the host vehicle traveling on the predetermined irregularities, when the host vehicle is traveling within the area except road-ways.

8. The automotive lane deviation prevention apparatus as claimed in claim 2, further comprising:

a picture image pick-up device that captures a picture image in front of the host vehicle; and

a lane marking line detector that detects the lane marking line based on the picture image captured by the picture image pick-up device,

wherein the processor is further programmed for:

(e) determining, based on the lane marking line detected, whether the host vehicle tends to deviate from the driving lane; and

(f) executing lane deviation prevention (LDP) control by which the host vehicle's lane deviation tendency is avoided, in presence of the host vehicle's lane-deviation tendency.

9. The automotive lane deviation prevention apparatus as claimed in claim 8, wherein the processor is further programmed for:

(g) increasingly compensating for a controlled variable for the LDP control, when the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the

right-hand side lane marking line of the driving lane and additionally in presence of the host vehicle's lane-deviation tendency.

10. The automotive lane deviation prevention apparatus as claimed in claim 8, wherein the processor is further programmed for:

(h) detecting a host vehicle speed, a host vehicle's yaw angle with respect to a direction of the host vehicle's driving lane, a host vehicle's lateral displacement from a central axis of the host vehicle's driving lane, and a curvature of the host vehicle's driving lane;

(i) calculating a future lateral-displacement estimate based on the host vehicle speed, the yaw angle, the lateral displacement, and the curvature; and

(j) determining that the host vehicle tends to deviate from the driving lane, when an absolute value of the future lateral-displacement estimate is greater than or equal to a predetermined lateral-displacement criterion.

11. The automotive lane deviation prevention apparatus as claimed in claim 8, wherein the processor is further programmed for:

(k) calculating a braking/driving force controlled variable of each of the road wheels so that a yaw moment is produced in a direction in which the host vehicle's lane-deviation tendency is avoided, in presence of the host vehicle's lane-deviation tendency; and

(l) controlling braking/driving forces of the road wheels, responsively to the braking/driving force controlled variables calculated.

12. The automotive lane deviation prevention apparatus as claimed in claim 11, wherein the processor is further programmed for:

(m) calculating, based on a difference between the future lateral-displacement estimate and the predetermined lateral-displacement criterion, a desired yaw moment to be exerted on the host vehicle; and

(n) calculating, based on the desired yaw moment, the braking/driving force controlled variable of each of the road wheels.

13. The automotive lane deviation prevention apparatus as claimed in claim 2, wherein the processor is further programmed for:

(o) controlling a braking force of each of road wheels so that a yaw moment is produced in a direction in which the host vehicle returns to the central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane.

14. The automotive lane deviation prevention apparatus as claimed in claim 13, wherein the processor is further programmed for:

(p) calculating a braking/driving force controlled variable of each of the road wheels so that a predetermined constant yaw moment is produced in a direction in which the host vehicle returns to the central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane; and

(q) controlling braking/driving forces of the road wheels, responsively to the braking/driving force controlled variables calculated.

15. The automotive lane deviation prevention apparatus as claimed in claim 2, wherein the processor is further programmed for:

(r) producing a steering torque in a direction in which the host vehicle returns to the central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities formed on or close to either one of the left-hand side lane marking line and the right-hand side lane marking line of the driving lane.

16. An automotive lane deviation prevention apparatus comprising:

sensors that detect whether a host vehicle is traveling on predetermined irregularities formed on or close to either one of a left-hand side lane marking line and a right-hand side lane marking line of a driving lane;

a yawing-motion control actuator that adjusts a yaw moment exerted on the host vehicle;

a control unit being configured to be electronically connected to the yawing-motion control actuator and the sensors, for controlling the yawing motion of the host vehicle in response to signals from the sensors for yawing motion control purposes; the control unit comprising

(a) road-surface irregularities detection means for determining, based on the signals from the sensors, whether the host vehicle is traveling on the predetermined irregularities; and

(b) vehicle yawing motion control means for executing vehicle yawing motion control by which the host vehicle

returns to a central position of the driving lane, when the road-surface irregularities detection means determines that the host vehicle is traveling on the predetermined irregularities.

17. A method of preventing lane deviation of a host vehicle employing braking force actuators that adjust braking forces applied to respective road wheels, the method comprising:

detecting whether the host vehicle is traveling on predetermined irregularities formed on or close to either one of a left-hand side lane marking line and a right-hand side lane marking line of a driving lane; and

executing lane deviation prevention control by feedback-controlling the braking forces applied to the road wheels so that the host vehicle returns to a central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities.

18. A method of preventing lane deviation of a host vehicle employing a steering actuator that adjusts a steering torque applied to a steering wheel, the method comprising:

detecting whether the host vehicle is traveling on predetermined irregularities formed on or close to either one of a left-hand side lane marking line and a right-hand side lane marking line of a driving lane; and

executing lane deviation prevention control by feedback-controlling the steering torque applied to the steering wheel so that the host vehicle returns to a central position of the driving lane, when the host vehicle is traveling on the predetermined irregularities.